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To explore the feasibility of sample selection to predict agricultural employment, a stratified sample of 360 employers was drawn from the employers reporting employment in the Disability Insurance Program for agricultural workers in Fresno County. Month-to-month changes were examined for seven industry strata, and estimates were made by the link-relative method. Employment estimates were compared with the reported universe employment for the corresponding month to determine the accuracy of the sample as a means of estimating. Data indicated that the method may be feasible, but that the sample must be designed to include employers whose seasonal labor needs occur at different periods of the year. (JM)

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Estimating Agricultural Employment from a Sample of Employers

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Current estimates of agricultural employment in California are based on Farm Labor Representatives' estimates of the amount of labor needed in activities currently in progress. Estimates of current employment in non-agricultural industries are based on responses from a sample of employers. Thus, the two kinds of estimates are not strictly comparable, and the agricultural estimates may be subject to errors which do not affect the non-agricultural estimates. Another, and a particularly troublesome problem, is the likelihood of over-estimating employment in certain agriculture-related industries, by counting workers as belonging to both the agricultural and non-agricultural segments. Attempts have been made in other states, e.g., Wisconsin, Oregon, Washington, to estimate agricultural employment through an establishment reporting system. California is uniquely fortunate in having as a source of information the employment and payroll figures submitted by agricultural employers for the administration of the disability insurance program for agricultural workers. This information is not only useful for providing a frame from which to select a sample, but it can also serve to check the reliability of the sample after it had been selected.

This paper will describe the method by which a sample of agricultural employers was selected, and the means used to validate the sample by comparison with known universe values. The purpose of the study was to explore the feasibility of sample selection and the accuracy with which a sample of a given size could predict employment over a period of months, and particularly for different seasons of the year. Not considered were the technical and administrative problems involved in initiating an establishment reports system in the field, of which probably the chief is obtaining the cooperation of employers in submitting accurate and timely reports. Also excluded from consideration was the validity of the data submitted by agricultural employers on Disability Insurance contribution returns. For the purpose of this report, it is assumed that they are the most accurate source of employment information, and that they are comparable to non-agricultural contribution returns.

I. SELECTION OF SAMPLE

A. Criteria for Selection

The sample of employers selected was drawn from a frame consisting of employers who reported employment covered by the Disability Insurance program for agricultural workers in Fresno County during the third quarter of 1962. Fresno County was selected primarily because it is the location of the Fresno Farm Labor Project. It was expected that the additional facilities provided by the project would assist in the implementation of field testing of establishment reporting, once a suitable sample was developed. In addition, Fresno County is the most important agricultural county in California, and accounts for about 12 percent of the total agricultural employment in the State, so that development of an adequate sample for Fresno County would contribute materially to development of a sample for the State as a whole. September 1962, was chosen as a benchmark period because September is the month of maximum agricultural

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employment in Fresno County, and the selection of 1962 as a benchmark year would allow a sufficient time following the period of selection for universe information to be available for validation of a complete year's data.

Initially, a sample design was tried in which the sample was stratified by industry and size of firm in September 1962. However, when an attempt was made to validate this sample it became apparent that a bias was introduced because employers whose highest employment was in months other than September were underrepresented. As a result, employment for these months was seriously underestimated.

The sample design as finally adopted was based on the following considerations:

(1) The sample was stratified by industry group, and within the industry Fruit and Tree Nut Farms, (except citrus), by crop.

(2) All employers with over 100 employees at any time during the September, 1962 through September, 1963 period were included.

(3) Otherwise, allocation to the strata was based on seasonal variability.

(4) The sample consisted of about 360 employers.

B. Methodology

The standard deviation of seasonal variability of employment was calculated for each four-digit Standard Industrial Classification group in agriculture in Fresno County by using the employment totals by month as cumulated on group prints of employer tax returns. In figuring the standard deviation, employment for each month was treated as one item in the frequency distribution. The standard deviations in each stratum were weighted by the number of employers, and the weights were pro-rated to 300 to give an approximation of the number of cases needed in each stratum for a total sample of 300. Because of the necessity for augmenting the allocation to the Fruit and Tree Nut Farms, (except citrus) stratum, the final sample consisted of 359 employers.

Control cards are maintained routinely in the Research and Statistics Section showing month-to-month changes in employment for all agricultural employers who have had 100 or more employees at any time since the inception of Disability Insurance agricultural coverage. These cards were used as an additional source of information, and any employer operating in Fresno County who had 100 or more workers at any time between October, 1962 and September, 1963, was included in the sample. The final sample allocation and determination of the strata, therefore, was based on a combination of weighting by seasonal variability and inclusion of all large employers. As finally selected, the sample included 359 employers, grouped into seven industry strata, of which one was an "all other" category including six employers in unrelated industries. There were 108 employers with 100 or more employees. Employers in four industry groups: Fruit and Tree Nut Farms (except citrus); General Farms; Cotton Farms; Agricultural Services, N.E.C., with a maximum of 50 to 99 employees were also added to the sample. When the number of employers in a size group exceeded the number required for the sample, an unbiassed subsample was taken by selecting every n^{th} employer in the group. For one industry group, Fruit and Nut Farms,

(except citrus) it was necessary to include all employers with over 50 employees and an unbiassed sample of employers with 40 to 49 employees. The methods of weighting the strata, and the final allocation are shown in Table 1.

II. USING THE SAMPLE TO ESTIMATE EMPLOYMENT

After the sample employers were selected, their reported employment for the period from September 1962 through September 1963 was determined by reference to the control cards and employer contribution returns. If a change of legal entity occurred during the year, the reports of the successor employer were used for the remainder of the year. Estimates of employment for the October 1962 - September 1963 period were made by the link-relative method, using the September 1962 universe as a benchmark. The derivation of these estimates appears in Table 2. Table 2a shows similar estimates for October 1963 through March 1964 using September 1963 as a benchmark.

The largest industry group, Fruit and Tree Nut Farms, (except citrus), presented problems in estimating because of the large number of employers, relatively small average employment and high seasonal variation. It was necessary to divide this group into four categories of employers by type of crop: grapes, figs, peaches, and other fruit and tree nuts. The classification was based on the employer's statement on his registration form. The distribution of universe employment among these four categories in September 1962 was estimated by drawing an additional sample of the employers on the basis of size categories, as shown on Table 3. The sample results were then expanded to the September 1962 universe. Using this September 1962 universe, estimates of employment were made by the link-relative method for each of these four groups for the October 1962 through September 1963 period, as shown on Table 4, and the sum of these estimates was used as the estimate for the Fruit and Tree Nut Farms, (except citrus) category. Similarly the sample was expanded to the September, 1963, universe, and this universe, shown on Table 3a, was used as a benchmark for estimates of employment for the October, 1963 through March, 1964 period. These estimates are shown on Table 4a.

III. VALIDATION OF THE SAMPLE

The employment estimates made by the link-relative method were compared with the reported universe employment for the corresponding month, to determine the accuracy of the sample as a means of estimating. As shown in Table 5, errors of estimate ranged from +16.2 to -11.2 percent, or in absolute terms from +3,752 to -6,775. For ten of the eighteen months, the sample estimates were less than five percent in error.

IV. CONCLUSIONS

The data cited above and appearing in Tables 2, 2a, 4, 4a, and 5 indicate that drawing a sample of employers from Disability Insurance records may be feasible. However, the sample must be designed to include employers whose seasonal labor needs occur at different periods of the year, and therefore employment records for a given month cannot be used as a frame. The data also indicate that the sample drawn was not sufficiently large to provide the required degree of precision. In this connection it should be noted that the degree of precision added with the addition of each employer over the 359 finally selected would tend to diminish, because the excluded employers are those with a smaller number of employees than those included in the sample.

The method of verifying sample design by reference to accessible universe data proved a very helpful device in evaluation of the accuracy of the sample. In fact, it probably resulted in rejection of an insufficiently precise sample which without this validation would likely have been accepted. This study may prove helpful in evaluating the accuracy of estimates of agricultural workers based on samples for which no universe figures are available. Perhaps the methodology used for this study will also suggest applications for sample design outside of agricultural labor force estimating, where estimates must be made in advance of universe figures which are not accessible immediately but which become available at a less timely date.

Table 1

Allocation of Sample to Industry Strata, Fresno County Employers

SIC Code	Industry	Standard deviation of seasonality	Number of employers	Weighting factor	Weight prorated to 300	Number of employers with 100 or more employees	Employers in sample
	Total			15,469,281	300.0	105	359
0112	Cotton farms	197.39	1,005	198,377	3.8	4	5
0113	Cash grain farms	9.16	60	550	(a)	-	-
0119	Other field crop farms	5.26	63	331	(a)	2	2 (b)
0121(c)	Citrus farms	47.47	381	18,086	0.4	1	1 (b)
0122	Fruit and tree nut farms (except citrus)	1,422.29	9,093	12,932,883	250.8	24	250
0123	Vegetable farms	68.32	197	13,459	0.3	2	2
0132	Dairy farms	28.96	321	9,296	0.2	-	-
0133	Poultry farms	32.00	265	8,480	0.2	-	-
0139	Beef cattle, hog, goat and sheep farms	31.02	370	11,477	0.2	-	-
0142	General farms, primarily crop	603.88	3,064	1,850,288	35.9	14	40
0142	General farms, primarily livestock	0.71	14	10	(a)	-	
0144	General crop and livestock farms	95.90	658	63,102	1.2	-	
0192	Horticultural specialties	3.60	26	94	(a)	1	1 (b)
0193	Animal specialties	0.33	26	9	(a)	-	-
0213	Residential farms	0.55	9	5	(a)	-	-
0712	Cotton ginning and compressing (d)	9.11	74	674	(a)	-	-
0714	Corn shelling, hay baling and threshing	3.16	24	76	(a)	-	-
0715	Non-citrus fruit packing and vegetable packing	8.06	14	113	(a)	1	1 (b)
0716(c)	Citrus packing	2.45	4	10	(a)	-	-
0718(c)	Labor contractors	598.80	493	295,208	5.7	51	51
0719	Agricultural services, not elsewhere classified	68.28	389	26,561	0.5	4	5
0722	Veterinarians	0.14	4	1	(a)	-	-
0723	Poultry hatcheries	8.60	17	146	(a)	1	1 (b)
0729	Animal husbandry services, not elsewhere classified	3.16	28	88	(a)	-	-
0731	Horticultural services	0.45	4	2	(a)	-	-
0753(c)	Farm commodity associations, other than citrus	1.73	4	7	(a)	-	-
0754(c)	Farm commodity association, citrus	1.73	3	5	(a)	-	-
0761(c)	Harvesting and resale of purchased crops	9.28	21	195	(a)	-	-
0398(c)	Agricultural activity unknown	81.65	449	36,661	0.7	-	-
0399(c)	Agricultural activity unknown	21.44	144	3,087	0.1	-	-

(a) Less than 0.1 percent (b) Included in "all other" category of sample. (c) Code assigned by Department of Employment
(d) Includes custom harvesting of cotton

SOURCE: Edit Listings

Table 2

Estimated Agricultural Employment in Fresno County-October, 1962 through September, 1963

Industry	Universe Employment Sept 1962	Sample Sept 1962	Sample Oct 1962	Oct Sample / Sept Sample	Estimated Employment Oct 1962	Sample Nov 1962	Nov Sample / Oct Sample	Estimated Employment Nov 1962
Fruit and tree nut farms, (except citrus)(a)								
Cotton farms	1,862	477	456	.956	1,780	473	1.037	1,846
Vegetable farms	580	339	287	.847	491	226	.787	386
General farms	8,680	2,764	1,641	.594	5,156	1,643	1.001	5,161
Labor contractors	7,335	5,355	4,417	.825	6,051	4,785	1.083	6,553
Agricultural services, n.e.c.	745	233	249	1.069	796	123	.493	392
All other	5,843	1,125	805	.716	4,184	475	.590	2,469

Industry	Sample Dec 1962	Dec Sample / Nov Sample	Estimated Employment Dec 1962	Sample Jan 1963	Jan Sample / Dec Sample	Estimated Employment Jan 1963	Sample Feb 1963	Feb Sample / Jan Sample
Cotton farms	491	1.038	1,916	440	.896	1,717	405	.920
Vegetable farms	182	.805	311	160	.879	273	153	.956
General farms	1,421	.865	4,464	1,724	1.213	5,415	1,727	1.002
Labor contractors	3,057	.639	4,187	1,520	.497	2,081	1,463	.962
Agricultural services, n.e.c.	121	.984	386	126	1.041	402	52	.413
All other	610	1.284	3,170	719	1.179	3,737	665	.925

Industry	Estimated Employment Feb 1963	Sample Mar 1963	Mar Sample / Feb Sample	Estimated Employment Mar 1963	Sample Apr 1963	Apr Sample / Mar Sample	Estimated Employment Apr 1963	Sample May 1963
Cotton farms	1,580	479	1.183	1,869	490	1.023	1,912	514
Vegetable farms	261	189	1.235	322	233	1.233	397	379
General farms	5,426	1,803	1.044	5,665	1,328	.737	4,175	1,747
Labor contractors	2,002	2,870	1.962	3,928	4,017	1.400	5,499	7,535
Agricultural services, n.e.c.	166	69	1.327	220	38	.551	121	153
All other	3,457	618	.929	3,212	313	.506	1,625	305

(a) See Table 4.

Table 2 - Estimated Agricultural Employment in Fresno County
October, 1962 through September, 1963 - (Continued)

Industry	May Sample Apr Sample	Estimated Employment May 1963	Sample June 1963	June Sample May Sample	Estimated Employment June 1963	Sample July 1963	July Sample June Sample
Cotton farms.....	1.049	2,006	537	1.045	2,096	563	1.048
Vegetable farms.....	1.627	646	518	1.367	883	257	.496
General farms.....	1.316	5,494	2,197	1.258	6,911	2,717	1.237
Labor contractors.....	1.876	10,316	8,718	1.157	11,936	5,060	.580
Agricultural services, n.e.c.	4.026	487	479	3.131	1,525	307	.641
All other.....	.974	1,583	524	1.718	2,720	355	.677

Industry	Estimated Employment July 1963	Sample Aug 1963	Aug Sample July Sample	Estimated Employment Aug 1963	Sample Sept 1963	Sept Sample Aug Sample	Estimated Employment Sept 1963
Cotton farms.....	2,197	558	.991	2,177	490	.878	1,911
Vegetable farms.....	438	293	1.140	499	254	.867	433
General farms.....	8,549	2,890	1.064	9,096	2,637	.912	8,296
Labor contractors.....	6,923	4,712	.931	6,445	4,969	1.055	6,799
Agricultural services, n.e.c.	978	245	.798	780	249	1.016	792
All other.....	1,841	363	1.023	1,883	344	.948	1,785

SOURCE: DE 7003's

Table 2a

Estimated DI-AG Employment for Fresno County-October, 1963 through March, 1964

Industry	Universe Employment Sept 1963	Sample Sept 1963	Sample Oct 1963	Oct Sample / Sept Sample	Estimated Employment Oct 1963	Sample Nov 1963	Nov Sample / Oct Sample	Estimated Employment Nov 1963
Fruit and tree nut farms, (except citrus)(a)								
Cotton farms	1,957	490	467	.953	1,865	434	.929	1,733
Vegetable farms	633	254	251	.988	625	155	.618	386
General farms	9,813	2,637	1,884	.714	7,006	1,831	.972	6,810
Labor contractors	7,099	4,969	3,859	.777	5,516	3,997	1.036	5,715
Agricultural services, n.e.c.	985	249	255	1.024	1,009	46	.180	182
All other	2,994	344	325	.945	2,829	363	1.117	3,160

Industry	Sample Dec 1963	Dec Sample / Nov Sample	Estimated Employment Dec 1963	Sample Jan 1964	Jan Sample / Dec Sample	Estimated Employment Jan 1964	Sample Feb 1964	Feb Sample / Jan Sample
Cotton farms	434	1.000	1,733	439	1.012	1,754	452	1.030
Vegetable farms	109	.703	271	227	2.082	564	230	1.013
General farms	1,656	.904	6,156	1,644	.993	6,113	1,868	1.136
Labor contractors	3,768	.943	5,389	2,566	.681	3,670	2,275	.886
Agricultural services, n.e.c.	55	1.196	218	76	1.382	301	89	1.171
All other	323	.890	2,812	414	1.282	3,605	399	.964

Industry	Estimated Employment Feb 1964	Sample Mar 1964	Mar Sample / Feb Sample	Estimated Employment Mar 1964
Cotton farms	1,807	472	1.044	1,886
Vegetable farms	571	233	1.013	578
General farms	6,944	1,777	.951	6,604
Labor contractors	3,252	1,764	.775	2,520
Agricultural services, n.e.c.	352	69	.775	273
All other	3,475	452	1.133	3,937

(a) See Table 4a

SOURCE: DE 7003's

Table 3

Estimated Employment by Crop in Fruit and Tree Nut Farms, Fresno County
September, 1962

Size of establishment, employees	Sample (a)	Percent sample to universe	Expanded sample	Percent of total	Universe employment (b)	Difference: universe and expanded universe	Adjuste expansi of samp or univ
Total	10,796		29,582 (29,333)(d)	(100)	28,267	-1,315	28,26
Grapes (c).....	7,170		21,828	(75)		- 986	20,84
100 and over.....	759	100	759				
50 - 100.....	4,043	100	4,043				
20 - 49.....	1,594	18	8,926				
10 - 19.....	512	10	5,120				
4 - 9.....	226	10	2,260				
0 - 3.....	36	5	720				
Figs (c).....	449		939	(3)		- 40	89
100 and over.....	193	100	193				
50 - 100.....	184	100	184				
20 - 49.....	36	18	202				
10 - 19.....	32	10	320				
4 - 9.....	4	10	40				
0 - 3.....	-						
Peaches (c).....	249		249			-	24
100 and over.....	244	100	244				
50 - 100.....	5	100	5				
Mixed and others (c)..	2,928		6,566	(22)		- 289	6,27
100 and over.....	1,023	100	1,023				
50 - 100.....	1,363	100	1,363				
20 - 49.....	350	18	1,960				
10 - 19.....	87	10	870				
4 - 9.....	75	10	750				
0 - 3.....	30	5	600				

(a) Source: DE 7003's
(b) Source: Edit listing
(c) Employers classified by crop according to information on registration forms.
(d) Total expanded sample employment less 100% sample in Peaches category.

Table 3a
Estimated Employment by Crop in Fruit and Tree Nut Farms,
Fresno County, September, 1963

	Universe Sept 1963	Sample employment by crop as percent of universe, Sept, 1962.	Employment by crop Sept 1963
Total	37,171 (37,133)(a)	100	37,171
Grapes		75	27,850
Figs		3	1,114
Peaches		(b)	38
Mixed and others		22	8,169

(a) Total employment less 100% sample in Peaches category.
(b) 100 percent sample.
SOURCE: Edit listing

Table 4
Estimated Fruit and Tree Nut Farms, (Except Citrus)
Employment in Fresno County
October, 1962 through September, 1963

Type of Crop	Universe Employment Sept 1962(a)	Sample Sept 1962	Sample Oct 1962	Oct Sample / Sept Sample	Estimated Employment Oct 1962	Sample Nov 1962	Nov Sample / Oct Sample	Estimated Employment Nov 1962
Total	28,267				12,428			6,480
Grapes	20,842	6,319	2,233	.353	7,357	1,069	.479	3,524
Figs	899	413	237	.574	516	105	.443	228
Peaches	249	249	111	-	111	13	-	13
Mixed and others	6,277	2,699	1,911	.708	4,444	1,168	.611	2,715

Type of Crop	Sample Dec 1962	Dec Sample / Nov Sample	Estimated Employment Dec 1962	Sample Jan 1963	Jan Sample / Dec Sample	Estimated Employment Jan 1963	Sample Feb 1963	Feb Sample / Jan Sample
Total			8,432			9,085		
Grapes	1,691	1.582	5,575	1,808	1.069	5,960	1,832	1.013
Figs	84	.800	182	93	1.107	201	83	.892
Peaches	79	-	79	84	-	84	46	-
Mixed and others	1,117	.956	2,596	1,222	1.094	2,840	1,221	.999

Type of Crop	Estimated Employment Feb 1963	Sample Mar 1963	Mar Sample / Feb Sample	Estimated Employment Mar 1963	Sample Apr 1963	Apr Sample / Mar Sample	Estimated Employment Apr 1963	Sample May 1963
Total	9,099			6,295			5,837	
Grapes	6,037	1,203	.657	3,966	886	.736	2,919	1,010
Figs	179	84	1.012	181	111	1.321	239	74
Peaches	46	29	-	29	115	-	115	204
Mixed and others	2,837	912	.747	2,119	1,104	1.210	2,564	2,131

Type of Crop	May Sample / Apr Sample	Estimated Employment May 1963	Sample June 1963	June Sample / May Sample	Estimated Employment June 1963	Sample July 1963	July Sample / June Sample	Estimated Employment July 1963
Total		8,639			12,306			11,866
Grapes	1.140	3,328	1,427	1.413	4,702	1,347	.944	4,439
Figs	.666	159	185	2,500	398	244	1.319	525
Peaches	-	204	190	-	190	321	-	321
Mixed and others	1.930	4,948	3,023	1.418	7,016	2,835	.938	6,581

(a) From Table 3

Table 4
Estimated Fruit and Tree Nut Farms, (Except Citrus) .
Employment in Fresno County - (Continued)

Type of Crop	Sample Aug 1963	Aug Sample / July Sample	Estimated Employment Aug 1963	Sample Sept 1963	Sept Sample / Aug Sample	Estimated Employment Sept 1963
Total.....			15,450			33,861
Grapes.....	2,257	1.676	7,440	7,770	3.443	25,616
Figs.....	300	1.230	646	502	1.673	1,081
Peaches.....	322	-	322	38	-	38
Mixed and others.....	3,034	1.070	7,042	3,069	1.012	7,126

SOURCE: DE 7003's

Table 4a

Estimated Fruit and Tree Nut Farms,(Except Citrus)Employment in Fresno County
October, 1963 through December, 1963

Type of Crop	Universe (a) Employment Sept 1963	Sample Sept 1963	Sample Oct 1963	Oct Sample / Sept Sample	Estimated Employment Oct 1963	Sample Nov 1963	Nov Sample / Oct Sample	Estimated Employment Nov 1963
Total	37,171				19,059			10,453
Grapes	27,850	7,770	3,537	.455	12,672	1,668	.472	5,981
Figs	1,114	502	318	.633	705	253	.796	561
Peaches	38	38	94	-	94	39	-	39
Mixed and others	8,169	3,069	2,099	.684	5,588	1,454	.693	3,872

Type of Crop	Sample Dec 1963	Dec Sample / Nov Sample	Estimated Employment Dec 1963	Sample Jan 1964	Jan Sample / Dec Sample	Estimated Employment Jan 1964	Sample Feb 1964	Feb Sample / Jan Sample
Total			10,065			9,667		
Grapes	1,817	1.089	6,513	1,805	.993	6,467	1,872	1.037
Figs	78	.308	173	78	1.000	173	87	1.115
Peaches	99	-	99	78	-	78	94	-
Mixed and others	1,231	.847	3,280	1,107	.899	2,949	1,144	1.033

Type of Crop	Estimated Employment Feb 1964	Sample Mar 1964	Mar Sample / Feb Sample	Estimated Employment Mar 1964
Total	10,039			6,463
Grapes	6,706	1,119	.598	4,010
Figs	193	132	1.517	293
Peaches	94	16	-	16
Mixed and others	3,046	805	.704	2,144

(a) From Table 3a
SOURCE: DE 7003's

Table 5

Comparison of Estimated and Actual Agricultural Employment in Fresno County
October, 1962 through December, 1963

	1962 October				1962 November			
	Actual	Estimated	Difference	Percent Difference	Actual	Estimated	Difference	Percent Difference
Total.....	30,235	30,886	651	2.2	23,604	23,287	-317	-1.3
Cotton farms.....	2,221	1,780			2,454	1,846		
Fruit and tree nut farms.	10,689	12,428			5,593	6,480		
Vegetable farms.....	513	491			548	386		
General farms.....	6,364	5,156			5,954	5,161		
Labor contractors.....	5,526	6,051			5,195	6,553		
Ag services, n.e.c.....	842	796			568	392		
All other (inc. unknown).	4,080	4,184			3,292	2,469		

	1962 December				1963 January			
Total.....	25,031	22,866	-2,165	-8.6	22,925	22,710	-215	-0.9
Cotton farms.....	1,822	1,916			1,402	1,717		
Fruit and tree nut farms.	9,893	8,432			10,453	9,085		
Vegetable farms.....	460	311			436	273		
General farms.....	5,293	4,464			5,137	5,415		
Labor contractors.....	3,686	4,187			2,279	2,081		
Ag services, n.e.c.....	441	386			431	402		
All other (inc. unknown).	3,436	3,170			2,787	3,737		

	1963 February				1963 March			
Total.....	22,927	21,991	-936	-4.1	22,045	21,511	-534	-2.4
Cotton farms.....	1,341	1,580			1,546	1,869		
Fruit and tree nut farms.	10,758	9,099			7,272	6,295		
Vegetable farms.....	404	261			573	322		
General farms.....	5,322	5,426			5,471	5,665		
Labor contractors.....	2,142	2,002			3,965	3,928		
Ag services, n.e.c.....	353	166			417	220		
All other (inc. unknown).	2,607	3,457			2,801	3,212		

Table 5
Comparison of Estimated and Actual Agricultural Employment in Fresno County
October, 1962 through December, 1963 - (Continued)

1963

Industry	April Actual	April Estimated	April Difference	April Percent Difference	May Actual	May Estimated	May Difference	May Percent Difference
Total.....	20,642	19,566	-1,076	-5.2	31,170	29,171	-1,999	-6.4
Cotton farms.....	1,629	1,912			2,112	2,006		
Fruit and tree nut farms.	5,749	5,837			8,395	8,639		
Vegetable farms.....	622	397			801	646		
General farms.....	5,191	4,175			7,304	5,494		
Labor contractors.....	4,641	5,499			9,047	10,316		
Ag services, n.e.c.....	364	121			597	487		
All other (inc. unknown).	2,446	1,625			2,914	1,583		

Industry	June				July			
Total.....	37,833	38,377	-544	-1.4	30,092	32,792	2,700	9.0
Cotton farms.....	1,629	1,912			2,130	2,197		
Fruit and tree nut farms.	9,815	12,306			10,202	11,866		
Vegetable farms.....	1,150	883			813	438		
General farms.....	8,918	6,911			7,840	8,549		
Labor contractors.....	10,620	11,936			5,910	6,923		
Ag services, n.e.c.....	1,079	1,525			847	978		
All other (inc. unknown).	3,611	2,720			2,350	1,841		

Industry	August				September			
Total.....	36,446	36,330	-116	-0.3	60,620	53,877	-6,775	-11.2
Cotton farms.....	2,084	2,177			1,957	1,911		
Fruit and tree nut farms.	15,659	15,450			37,171	33,861		
Vegetable farms.....	805	499			633	433		
General farms.....	8,362	9,096			9,813	8,296		
Labor contractors.....	6,203	6,445			7,099	6,799		
Ag services, n.e.c.....	850	780			985	792		
All other (inc. unknown).	2,483	1,883			2,994	1,785		

Table 5
Comparison of Estimated and Actual Agricultural Employment in Fresno County
October, 1962 through December, 1963 - (Continued)

Industry	1963 October Actual	Estimated	Difference	Percent Difference	1963 November Actual	Estimated	Difference	Percent Difference
Total	37,411	37,909	498	1.3	24,741	28,493	3,752	15.2
Cotton farms	1,928	1,865			1,962	1,733		
Fruit and tree nut farms	18,399	19,059			8,002	10,453		
Vegetable farms	578	625			533	386		
General farms	7,237	7,006			6,146	6,810		
Labor contractors	6,102	5,516			5,017	5,715		
Ag services, n.e.c.	1,149	1,009			637	182		
All other (inc. unknown)	2,018	2,829			2,444	3,160		
	1963 December				1964 January			
Total	24,998	26,644	1,646	6.6	25,227	25,674	447	1.8
Cotton farms	1,514	1,733			1,503	1,754		
Fruit and tree nut farms	9,885	10,065			11,242	9,667		
Vegetable farms	458	271			540	564		
General farms	5,612	6,156			5,706	6,113		
Labor contractors	4,768	5,389			3,472	3,670		
Ag services, n.e.c.	445	218			386	301		
All other (inc. unknown)	2,316	2,812			2,378	3,605		
	1964 February				1964 March			
Total	26,031	26,442	411	1.6	19,154	22,261	3,107	16.2
Cotton farms	1,677	1,807			1,511	1,886		
Fruit and tree nut farms	11,856	10,039			6,762	6,463		
Vegetable farms	574	571			580	578		
General farms	6,426	6,944			5,365	6,604		
Labor contractors	2,695	3,252			2,332	2,520		
Ag services, n.e.c.	398	352			335	273		
All other (inc. unknown)	2,405	3,475			2,269	3,937		

SOURCES: Actual, Edit listings; Estimated, Tables 2, 2a, 4 and 4a.